

MARINE RECREATIONAL INFORMATION PROGRAM

FY Project Plan

Review of Current Sampling and Estimation Methods for the Large Pelagics Survey (LPS)

Created on

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1. Overview

1.1. Background

NOAA Fisheries Service is responsible for monitoring and managing United States marine fisheries resources. Large pelagic species (e.g., tunas, billfish, swordfish, and sharks) are of particular management interest as they support socially and economically important recreational and commercial fisheries. The collection of catch and effort information on large pelagics also fulfills U.S. obligations to the International Commission for the Conservation of Atlantic Tunas. The Large Pelagics Survey (LPS) is designed to collect information on recreational fishing directed at large pelagics. Offshore trips targeting large pelagics typically make up a relatively small proportion of all recreational fishing trips. Use of this specialized survey design allows for higher levels of sampling for large pelagic trips, which ultimately improves estimates of catch and effort for large pelagics. The survey is comprised of two independent, complementary surveys: the Large Pelagics Telephone Survey (LPTS), which collects fishing effort information from a list frame of captains holding federal permits required to fish for some large pelagic species, and the Large Pelagics Intercept Survey (LPIS), an access point intercept survey of private and charter boat captains that provides detailed trip and catch characterization data along with supplemental effort information used to account for undercoverage in the telephone survey. Together, these two surveys provide the effort and mean catch rates needed to estimate recreational catch of large pelagics.

In response to a 2006 National Research Council (NRC) review of recreational data collection methods, the Marine Recreational Information Program (MRIP) was initiated to address issues identified in the current surveys, including the LPS. The NRC report identified problems in the Access Point Angler Intercept Survey (APAIS, or “intercept survey”) that the NOAA Fisheries Service has conducted for many years as a component of the Marine Recreational Fisheries Statistics Survey (MRFSS). Three main issues were identified: 1) the survey estimators and measures of precision were not accounting for the complex sampling design, 2) the data collection protocols were combining formal randomization with subjective decision-making in ways that make it difficult to develop statistically valid estimators, and 3) the spatio-temporal sampling frame was not providing coverage of fishing trips ending on private property or at night. To address these issues, an MRIP project completed in 2011 produced a new weighted estimation method that appropriately accounts for the MRFSS sampling design (Breidt et al., 2011). The NOAA Fisheries Service subsequently applied this method to produce design-unbiased annual estimates of 2004-2011 total finfish catches for the Atlantic and Gulf of Mexico. A second project completed in 2012 focused on developing a new sampling design for the intercept survey that would address additional NRC concerns about the data collection protocols and temporal coverage of sampling, as well as specific recommendations provided by Breidt et al. (2011) to further improve its statistical validity and accuracy. Recommendations from this study were used to develop a new intercept survey design that will be implemented along the Atlantic and Gulf of Mexico coasts in 2013.

1.2. Project Description

The MRFSS design reviewed by the NRC and the LPS are similar in some respects but differ in several others. Thus, some of the issues identified by NRC and already addressed by MRIP are relevant to the LPS while others are not. There are also survey design issues and potential improvements particular to the LPS that were neither discussed in the NRC report nor addressed in the MRIP projects described above. This project will critically review all aspects of the Large Pelagics Survey including the intercept survey (LPIS), the effort survey (LPTS), and the estimation methodology. Similar to the MRFSS review, this project will address statistical considerations associated with the validity, accuracy, and efficiency of the current LPS sampling and estimation methods. This project will also address HMS management and stock assessment needs for recreational survey data, and recommend survey design and estimation method improvements aimed at better meeting those needs where current or anticipated deficiencies exist. How the data are used in fisheries management will, to a large extent, inform statistical recommendations related to the precision, timeliness, and spatial resolution of catch estimates.

1.3. Objectives

The primary objectives of this project are to 1) review the current LPS sampling and estimation designs that produce data for monitoring recreational catches of highly migratory species from Virginia through Maine, 2) identify potential sources of bias, evaluate applications of sampling theory, and evaluate the utilization of sampling probabilities in estimation methods, 3) identify survey design and estimation method improvements aimed at better meeting HMS management and stock assessment needs for recreational survey data, and 4) provide recommendations and develop proposals for future projects that would design and test necessary improvements in the sampling and estimation designs.

1.4. References

Foster et al. 2008. Large Pelagics Survey: Methodology overview and issues. ICES CM 2008/K:22. National Research Council. 2006. Review of Recreational Fisheries Survey Methods. National Academy Press, Washington, DC.

2. Methodology

2.1. Methodology

The review of the LPS will be coordinated by NMFS staff in the Office of Science and Technology working in collaboration with private consultants with expertise in survey statistics, state agency partners, NMFS staff in the Highly Migratory Species Management Division of the Office of Sustainable Fisheries, and from the Southeast Fisheries Science Center. The project team will also include representatives from the recreational HMS fishing industry. A project kick-off workshop will be held to: 1) clarify and clearly define project objectives and scope, 2) familiarize project team members with the current LPS survey design, estimation methods, and data uses, 3) identify and discuss potential biases, inefficiencies and data gaps with the current approach, 4) identify specific areas of investigation and analysis required (quantitative and qualitative) for making informed recommendations, and 5) assign tasks to specific individuals and groups with timelines for completion.

Specific issues addressed by this review will include (but are not limited to) the following: 1) potential bias due to undercoverage of trips returning at night and early morning, 2) potential bias due to undercoverage of trips returning to private access sites, 3) approach for weighting intercept data properly for estimation, particularly HMS tournament data, 4) geographic stratification and trade-offs associated with temporal and geographic resolution of catch and effort estimates, 5) potential bias associated with sampling rates of Angling and General category permit holders in the private boat mode frame 6) survey design effects 7) survey data precision, timeliness, resolution, and temporal/spatial coverage in relation to management and stock assessment needs for HMS recreational data. The project team will also be asked to evaluate the option of integrating the specialized LPIS into the general Access Point Angler Intercept Survey (APAIS). The presumed benefits of integration associated with gains in sampling efficiency will need to be carefully weighed against identified costs (e.g. start-up costs, administrative costs, time-series considerations, questionnaire changes, public perception, and others).

2.2. Regions

2.3. Geographic Coverage

Current LPS Virginia to Maine; Evaluate options/trade-offs associated with expansion to other regions

2.4. Temporal Coverage

Current LPS June-October; Evaluate options/trade-offs associated with expansion to other months

2.5. Frequency

Annual

2.6. Unit of Analysis

Variable among the surveys to be reviewed and evaluated

2.7. Collection Mode

Variable among the surveys to be reviewed and evaluated

3. Communications Plan

3.1. Internal

- 1) Project workshop
- 2) Face-to-face meetings as needed for detailed review and analysis
- 3) Conference calls every 2 to 4 weeks as needed

3.2. External

- 1) Monthly reports to OT through MDMS
- 2) Bi-annual update presentations at Highly Migratory Species Advisory Panel Meetings
- 3) Posting of Workshop materials and summary on MRIP website

4. Assumptions and Constraints

4.1. New Data

No

4.2. Track Costs

4.3. Funding Vehicle

travel funded directly by MRIP; consultants hired as subcontractors under existing support vehicle

4.4. Data Resources

LPS data and statistics for 2002 to present

4.5. Other Resources

Consultant labor hours will be needed to perform the reviews, provide reports of recommendations, and support development of new project proposals to address those recommendations.

Partner and consultant travel will be needed to attend face-to-face meetings held for focused reviews of the current methods..

4.6. Regulations

Not applicable

4.7. Other

5. Risk

5.1. Project Risk

Table 1: Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
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6. Final Deliverables

6.1. Additional Reports

Final project team report with recommendations for LPS estimation and survey design.

6.2. New Data Sets

None

6.3. New Systems

None

7. Project Leadership

7.1. Project Leader and Members

Table 2: Project Members

Project Role	Name	Organization	Title
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8. Project Estimates

8.1. Project Schedule

Table 3: Project Schedule - Major Tasks and Milestones

#	Schedule Description	Planned Start	Planned Finish	Prerequisites	Milestones
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8.2. Cost Estimates

Table 4: Cost Estimates

Project Need	Cost Description	Date Needed	Estimated Cost
TOTAL			\$0.00